



Application of Aerodynamics in Civil Engineering

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Abstract

Aerodynamics is an important branch of fluid mechanics, which focuses on the air flow, either high-speed or low speed, around structures and the coupling effects between them. Initially, aerodynamics was applied only in aviation engineering. However, with the increasing demand for super large structures in civil engineering and high-speed transportation, aerodynamics has been extended to these new fields. Flow around bluff body is one of the key fundamental issues of aerodynamics, especially in civil engineering. Aerodynamic forces and flow induced vibrations are sometimes crucial for the design of structures in civil engineering. Optimization and flow control are the other objectives for studying the aerodynamics in civil engineering. This presentation will introduce the recent research projects in Central South University about foundational aerodynamics and its applications in civil engineering, e.g. high-rise building, bridge, high-speed trains, metro and solar panel array, etc.

Keywords: *Aerodynamics, Fluid mechanics, Coupling effects, High-speed transportation, Optimization and flow control*
